

the excitement in the neighbourhood had ceased, appeared to have no more anxiety about the matter. The remedy which they used appeared to be the root of the elecampane, &c., according to the formula given in *Rees's Encyclopædia*.

I hope my advice was correct, although I did not feel quite all the indifference I professed. One was bitten on the bare foot, the other on the hand among tendons and bones; nor could the precise point be indicated, thus rendering it altogether impossible to have removed the part, without amputating the foot and hand. This I suppose no prudent man would have advised, and in regard to the thousand-and-one certain remedies, the evidence is not of a nature to induce us to place reliance upon any of them. And to have talked of these things without caring to carry them into effect would merely have tended to increase the anxiety and mental depression, which are prominent symptoms of the disease, and may perhaps occasionally act as an exciting cause—at all events could do no good. I imagine that I did not much exaggerate their chance of immunity, since we only hear as a general rule from such as suffer, whilst those who are bitten and escape are only known for the most part among their own immediate acquaintances. And Mr. Hunter gives an account of twenty persons bitten by the same animal, only one of whom suffered from the disease. It must, from the above considerations, and from the rarity of the disease, be impossible to estimate with any probable degree of certainty the proportion who escape. I should certainly have given a larger estimate in this case if I had thought it would tend more powerfully to allay their anxiety.

ART. XIV.—*General Paralysis from Abscesses in the Cerebellum*. By
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A. B., æt. 40, married, of thin, spare habit, was attacked suddenly with a "fit" about four weeks ago, while walking in the street. Giddiness and involuntary clonic contractions of the left arm are the chief symptoms; he did not fall; did not lose consciousness; got home of himself. On getting into bed, similar convulsive movements attacked the left leg. Dyspnoea and foaming at the mouth occurred. He has not been able to walk since, nor can he get from and to his bed without assistance.

His health has not been good since he had syphilis four years ago; but has been worse since he received a blow on the back of his head and neck, by a trunk from the top of a stage in which he was upset about two years ago.

Cups and blisters to nucha; purges and stimulating embrocations to his limbs had been prescribed and used; his headache has been relieved and his limbs have regained some power.

March 20th, 1850.—Present symptoms: His countenance has an expression of weariness rather than of pain. He lies upon his back, unable to rise, but can use both arms and legs. His movements are slow and difficult; his muscles do not obey his will promptly; his knit brow and fixed eyes show that all his energies must be concentrated upon his right arm, that he may carry his hand to mine; the left he moves more readily and more promptly. His grasp is tolerably strong in both hands; but stronger in the left. His strength quickly fails; he cannot maintain his grasp more than a few seconds; it is relaxed, but the fingers are not unclasped; it is only by directing his attention to it that he opens his fingers so as to free my hand from his.

Sensation appears to be normal. He says he feels my pinch equally in both arms, and has in both equally good perception of what he holds; he does not loose his grasp, nor require to keep his eye upon what he holds in order to retain it in his hand. The reflex power is therefore normal.

His animal heat is very soon lost; a few moments exposure of his arm out of the bed is sufficient to make it extremely cold; and this he says brings on a return of the "spasms of the arm." Yet he does not feel the cold, nor does he perceive the cold wall with his feet, which his wife sometimes finds completely chilled by it, and he not aware that they were against it; to the touch they are extremely sensitive, being *ticked* beyond his endurance by the least handling. His eyes are natural; pupils normally sensitive to light; not dilated. Tongue natural; is protruded with ease and promptness; not turned aside. Stomach rejects food frequently; a very slight exertion causes vomiting. Bowels extremely costive; were pretty regular till a month ago. Pulse extremely weak, small and very slow. Spine examined by careful pressure on each vertebra; there is no pain at any.

25th. Had a slight return of the "spasms of the arm" on yesterday. To-day he appears to be weaker; his voice is faint and weak; his mind acts slowly; he replies to me only after an interval of a minute or two; but his replies are then correct and to the point. He protrudes his tongue slowly; seems to hold it out with his teeth; his lips remain grinning, only slowly regaining the natural position. He squeezes my hand with great effort; it evidently requires him to summon all the powers of his will to squeeze it at all. His left hand possesses more power than the right, but it costs him the same effort to use it.

29th. He has vomited every day; generally soon after eating, but always when he is worse or makes any effort to move himself; sinapisms have had no effect in restraining it. Hydrocyanic acid has appeared to arrest it. He has gained some strength since the "fit" of the 24th; his mind as well as his muscles acting now promptly.

30th. His wife reports a "severe fit" last night, and frequent vomiting. He is stupid; his brows contracted; his mouth quivers in the attempt to speak, but he says nothing. Cups to his temples; strychnine gr. $\frac{1}{16}$, three

times a-day, and hydrocyanic acid to be repeated or not, according to the frequency of the vomiting.

31st. He exhibits more strength than I have seen in him before; he takes the tumbler and carries it to his mouth, which he was unable to do. His replies are prompt and immediate; he gives his hand quickly and carries it promptly to mine, and without the usual slow movements and unsuccessful attempts; rubs his hands together. I have not seen him use so much muscular action before. He yawns a great deal; says he feels tired. He vomited once to-day; but has retained a piece of chicken. His bowels are obstinately costive; he has had no stool for a week almost.

April 1st. His wife finds that he complains greatly of pain in his neck whenever she raises his head; pressure causes pain at third, fourth and fifth cervical vertebræ.

6th. He has taken the strychnine at very irregular intervals, often refusing it altogether; has now taken about half a grain. There has been some apparent increase of strength; he has not required the same effort (with distortion of his face) to squeeze my hand; still he cannot regulate his movements. On attempting to put a pill into his own mouth, he could neither carry his hand directly to his mouth, nor, when he had reached it, could he open his mouth and his fingers at the same time; he either retained the pill, or let it fall while his mouth was still closed.

Emaciation has now become extreme; his belly is retracted to the spine, and presents a hollow beneath the ribs and below the diaphragm.

Vomiting has continued every day; sometimes but once, usually three or four times a-day. The sense of fatigue is nearly constant with him; yawning frequent. The only pain complained of is in his scalp—a feeling of soreness rather than of pain; he makes his wife rub it constantly with spts. camphor.

His mind has wandered a little. His wife has often reported that he "talks strangely" to her and "is very irritable." His replies to me have been correct, but he requires time to collect his thoughts; sometimes says he is "trying to remember," when I repeat my question. Sometimes he has started with surprise at seeing me, and appeared to forget me for the moment.

11th. Has continued in much the same state. Irritability increases. Soreness in the scalp is more constant. Pulse grows weaker. Power of grasp less and less. He has passed his urine under him, and also one or two stools. Skin over the sacrum is becoming hard and sore. Pain over the cervical vertebræ is greater; he cries out if I press strongly there.

13th. I found his heart acting with violent impulse, and great rapidity; its sounds normal; pulse unusually strong; a dull, heavy pain at heart was all he complained of.

23d. I found him with his head thrown back; his mouth fast closed; and his eyes staring wildly. He was alone, and may have just been suffering from one of his "fits," no one knowing it. His intellect was more dull than I had

yet found; he would not speak, though he understood me, putting out his tongue and grasping my hand when told.

26th. His mind is clear again; he talks readily, and to the purpose; but soon begins to ramble, talking to persons who are not present; he appears to be very sensitive to every noise about him, on the street or in the house; his eyes not more than naturally sensitive to the light. His left side is now as completely paralyzed as the right. Sloughs have formed on the hip and sacrum. He passes his urine beneath, but from inattention or paralysis of the bladder, for I saw him pass it in full stream.

To-day I galvanized him. He has for several days refused the strychnine, and indeed all medicine. He never took the strychnine regularly.

May 6th. Galvanism has been applied several times with intervals of a day, according to his strength. At first there was some appearance of improvement, shown by more energy of will and more prompt and ready movements, and by retaining his food for longer times.

Mild delirium has continued nearly constant; he talking continually to persons who were not present, and of things long gone by or that had never happened; and he raved so much about the galvanism that his wife wished it discontinued, thinking it caused the delirium.

11th. Died. Has continued to grow weaker since 6th, vomiting almost constantly. Brandy and water has been his only drink. Food of every sort he has refused for several days. Some intelligence and some power of motion remained this morning. He recognized his wife, squeezing her hand, and raised his head when his daughter's name was called. About noon he died.

Post-mort. examination forty-four hours after death.—Body emaciated to the last degree.

Brain.—Dura mater healthy, natural, pale; not adherent to cranium; arachnoid presented a few isolated spots of a slightly milky hue on the upper surface. Pia mater presented a moderate venous congestion. Substance of brain dry, very bloodless, of normal consistence; ventricles free of fluid; the plexus choroides remarkably pale.

Cerebellum.—Numerous encysted abscesses containing pure green pus were imbedded in the substance of the cerebellum, on both sides at the superior surface; at the base they were more numerous on the left side; the right containing but two or three, and these smaller; their size from that of a large marble to a pea; their walls a line perhaps in thickness, and sufficiently firm to permit the turning them readily out of the substance of the cerebellum. One or two near the surface were seen protruding before they were opened by the knife. The central lobe was not involved, nor did it appear to have been affected by them, neither by their pressure nor by their previous disease. There was diffused redness (minute arterial injection) on the surface of the convolutions, in a limited space on the left side, near the larger abscesses. Elsewhere the cerebellum appeared healthy to the eye.

Medulla Oblongata.—The gray matter was very pale, and not readily distinguished from the medullary; as was the case also with that of the spinal marrow; its substance appeared softer than natural; was readily wiped away with the sponge, breaking down very easily; there was congestion of the vertebral veins, probably cadaveric, as the blood was readily pressed out of them. Also a yellowish gelatinous substance in the loose cellular tissue between the dura mater and the med. spinalis, and the vertebral canal, of more than normal amount.

The *Spinal Canal* contained a small quantity of yellow serum.

Remarks.—The symptoms in connection with the post-mortem appearances agree perfectly with the received physiology of the cerebellum. Dr. Carpenter considers it "probable that the lobes are specially connected with the regulation and co-ordination of movements, whilst the vermiform processes are the parts connected with the sexual function." In this case, the seat of the abscesses was the lateral lobes of the cerebellum, and the most prominent symptom was the entire want of power to regulate his movements; as in the attempt to carry a pill to his own mouth. On another occasion, he attempted to give me his hand; he raised his arm and advanced it towards me, but the fingers remained extended perfectly straight and rigid, and would not grasp mine: after several attempts, he remarked, "They won't come down," and finally he endeavoured to seize and bend them himself with the other hand.

In addition to this, his movements were always slow and difficult; always slower than his will, and always required his attention to be fixed on each muscle (or set of muscles) before he could move at all. Both strychnine and galvanism (especially the former) appear to have recalled the power of combining his movements and to have increased the energy and the promptness of them. Their effects however were soon lost; the strychnine he neglected, the galvanism he quickly became accustomed to.

The central lobe was unaffected, and accordingly there was no evidence that the sexual instinct was either increased or diminished. Nor were his habits, of which he spoke freely to me, such as to make it probable that there was previous disturbance of that instinct subsequent to the injury at the back of his head: nor before this were they such as to have been a co-operating cause.

The vomiting and intense soreness of the scalp are probably due to pressure by these abscesses upon the medulla oblongata and upon the origin of nerves distributed upon the scalp.

To the vomiting and the protracted starvation in consequence of it are due the extreme emaciation and the delirium; the mild character of which, and its gradual increase, together with the normal condition of the brain, show that its cause was the want of nourishment. He seems really to have died of starvation, for there was nothing in the condition of his organs (so far as examined) to prevent his living till the abscesses were absorbed, could food have

been supplied to him and retained; he seldom suffered from hunger, if ever, indeed; and usually refused his food when brought him, although he might have just asked for it. A feeling of extreme fatigue was the most he complained of, caused, doubtless, by the condition of his nerve centres (spinal marrow), which suffered by the pressure of the abscesses, and in common with his general system by the want of nourishment and by the long disease of its functions.

ART. XV.—*On the Treatment of Permanent Pseudarthrosis by an Apparatus which permits the use of the Limb and obviates the necessity of Amputation.* By HENRY H. SMITH, M.D., Surgeon to the St. Joseph's Hospital, Philadelphia.

Few operations in surgery are more strikingly characteristic of the defects of the science than those of amputation of a limb on account of the existence of false joint.

When nature, under peculiar circumstances, shows herself unable to consolidate a broken bone, we readily recognize the great indebtedness of surgery to her powerful aid; but when in consequence of this a surgeon proposes to amputate a limb that is perfect except in the flexibility of the bone at the seat of injury, we cannot but notice the imperfect character of his art.

Under the most hopeless circumstances of ununited fracture, it should therefore be borne in mind that the restoration of the integrity of the lever upon which the muscles act will enable them to perform their function, and thus save the patient from becoming a cripple for life.

A simple means of affording the necessary support to a bone under these circumstances will be found in this and a previous paper. These means are but a slight modification of those which have been long employed in the bending of bones, resulting from mollities, &c., but their application to cases of pseudarthrosis generally will also be found to prove most valuable.

In No. XXIX., New Series of this Journal (Jan. 1848), I reported a case of false joint in the leg, in which the patient, after vainly suffering the application of caustic to the ends of the bones and subsequently their resection, was enabled to walk without difficulty by means of the splint there described. Suggestions were also offered as to the utility of somewhat similar means in the case of false joints in the upper extremity. I, however, feared at that time that pseudarthrosis in the femur would prove an exception to the general utility of the means recommended. Such I am now happy to say has not been the case in the instance in which it has been tried, and it is now reported in